

(12) **United States Patent**
Howell et al.

(10) **Patent No.:** **US 6,354,971 B1**
(45) **Date of Patent:** **Mar. 12, 2002**

(54) **COMPLIANT DERAILLEUR**

(75) Inventors: **Larry L. Howell**, Orem; **Michael Sean Baker**, Provo; **Aaron Lyle Herring**, Provo; **Christian Dennis Lott**, Provo, all of UT (US)

(73) Assignee: **Brigham Young University**, Provo, UT (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/496,555**

(22) Filed: **Feb. 2, 2000**

(51) **Int. Cl.**⁷ **B62M 9/12**

(52) **U.S. Cl.** **474/82**

(58) **Field of Search** 474/82, 80

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,106,356 A	8/1978	Nagano et al.	
4,530,678 A	7/1985	Wechsler	
4,637,809 A	1/1987	Nagano	
4,699,605 A *	10/1987	Jona	474/82
4,824,420 A	4/1989	Romano	
4,878,395 A	11/1989	Romano	
4,887,482 A	12/1989	Romano	
5,425,678 A *	6/1995	Richardson	474/82
5,836,844 A	11/1998	Yoshida	
5,897,451 A *	4/1999	Ichida	474/82

* cited by examiner

Primary Examiner—Charles A Marmor

Assistant Examiner—Ankur Parekh

(74) *Attorney, Agent, or Firm*—Thorpe North & Western

(57) **ABSTRACT**

A derailleur, and more particularly, to a bicycle derailleur device that is compliant and self returning. There is a derailleur for moving a chain from one location to another while maintaining parallel alignment to a set of gears that mounted to a cycle. Specifically, the derailleur has a first and second rigid segments, parallel to each other, where the first segment means is fixed to the cycle and the second segment means is free to traverse from a first to a second position. In addition there is a first linking means, coupled between the first and second segments, for linking the first and second rigid segments together, and designed to move from the first position to the second position. Moreover, there is a second linking means, coupled between the first and second segments and spaced from the first linking means in about a parallel position, for linking the first and second rigid segments together, and designed for resiliently biasing the derailleur into the first position and for resiliently bending into the second position. Wherein the first linking means being shorter than the second linking means. Additionally, there is a chain wheel, coupled to the second segment, having a first axis that remains about parallel through all successive locations between the first and second positions. Uniquely, the first link (24) is rotatably coupled to the first and second rigid segments through a first and second pivot pins (26 and 28) respectively. Wherein the second link fully comprises a flexible material allowing the entire second link to bend into a shape approximating an “S” shape during movement between the first and second positions.

20 Claims, 2 Drawing Sheets

